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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,266	09/27/2004	Heikki Heikkila	18276	5317

7590 07/09/2007  
Leopold Presser  
Scully Scott Murphy & Presser  
400 Garden City Plaza  
Garden City, NY 11530

EXAMINER

THERKORN, ERNEST G

ART UNIT	PAPER NUMBER
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1723

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07/09/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/509,266	<b>Applicant(s)</b> HEIKKILA ET AL.	
	<b>Examiner</b> Ernest G. Therkorn	<b>Art Unit</b> 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3-13,15,18,20-22 and 24-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-13,15,18,20-22 and 24-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-13, 15,18, 20-22, 24-29, 33, and 36-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856). PTO Translation 06-3081 of Japan Patent No. 4-158260 will serve as a translation of Japan Patent No. 4-158260. The claims are considered to read on PTO Translation 06-3081 of Japan Patent No. 4-158260 page 9, line 3's 50-90 acetonitrile aqueous solution and page 13, the fifth line from the bottom's 75% acetonitrile water. At best, the claims differ from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in reciting use of water as an eluent and a particle size range of 100 to 2000 microns. Quinn (U.S. Patent No. 5,772,874) (Abstract, lines 1-16, column 8, lines 3-10, and column 9, lines 20-24) discloses a particle diameter of several hundred microns and a reduced velocity of about 5000 yields improved analytical speeds and quantities. Heikkila (U.S. Patent No. 5,084,104) (column 3, lines 23-39) discloses that pure water is the most preferred eluent for

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separating a saccharide with an ion exchange resin. Heikkila (U.S. Patent No. 6,146,856) (column 7, line 58-column 8, line 12) discloses the combination of ion exchange particles of several hundred microns and water as an eluent for saccharides is well known. It would have been obvious to use water as an eluent and a particle size range of 100 to 2000 microns in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification because Quinn (U.S. Patent No. 5,772,874) (Abstract, lines 1-16, column 8, lines 3-10, and column 9, lines 20-24) discloses a particle diameter of several hundred microns and a reduced velocity of about 5000 yields improved analytical speeds and quantities; Heikkila (U.S. Patent No. 5,084,104) (column 3, lines 23-39) discloses that pure water is the most preferred eluent for separating a saccharide with an ion exchange resin; and Heikkila (U.S. Patent No. 6,146,856) (column 7, line 58-column 8, line 12) discloses the combination of ion exchange particles of several hundred microns and water as an eluent for saccharides is well known.

Claims 3, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 5-13, 15, 18, 20-22, 24-29, 33, and 36-41 above, and further in view of either Schoenrock (U.S. Patent No. 3,982,956) or Tanikawa (U.S. Patent No. 6,224,683). At best, the

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claims differ from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting use of a weakly acid cation exchange resin. Schoenrock (U.S. Patent No. 3,982,956) (column 1, lines 47-56 and column 2, line 65-column 3, line 20) discloses that use of a weak acid cation exchange resin prior to a weak base anion exchange resin removes undesirable cations. Tanikawa (U.S. Patent No. 6,224,683) (column 1, lines 46-51) discloses a weak acid cation exchange resin aids in softening and demineralization. It would have been obvious to use a weak acid cation exchange resin in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) either because Schoenrock (U.S. Patent No. 3,982,956) (column 1, lines 47-56 and column 2, line 65-column 3, line 20) discloses that use of a weak acid cation exchange resin prior to a weak base anion exchange resin removes undesirable cations or because Tanikawa (U.S. Patent No. 6,224,683) (column 1, lines 46-51) discloses a weak acid cation exchange resin aids in softening and demineralization.

Claims 3, 4, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-

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3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 5-13, 15,18, 20-22, 24-29, 33, and 36-41 above, and further in view of Heikkila (U.S. Patent No. 6,146,856). At best, the claims differ from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting use of a cation exchange resin. Heikkila (U.S. Patent No. 6,146,856) (column 2, lines 4-8) discloses that cation exchange resins chromatographically separate sugar solutions. It would have been obvious to use cation exchange resins in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Heikkila (U.S. Patent No. 6,146,856) (column 2, lines 4-8) discloses that cation exchange resins chromatographically separate sugar solutions.

Claims 5 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 5-13, 15,18, 20-22, 24-29, 33, and 36-41 above, and further in view of Fries (U.S. Patent No.

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4,718,946). At best, the claims differ from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting the weakly basic anion exchange resin is an acrylic-based resin. Fries (U.S. Patent No. 4,718,946) (column 1, line 67-column 2, line 12) discloses that use of acrylic in a weakly basic anion exchange resin reduces haze in treating sugar solutions. It would have been obvious to use acrylic in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Fries (U.S. Patent No. 4,718,946) (column 1, line 67-column 2, line 12) discloses that use of acrylic in a weakly basic anion exchange resin reduces haze in treating sugar solutions.

Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 5-13, 15, 18, 20-22, 24-29, 33, and 36-41 above, and further in view of either Haag (U.S. Patent No. 4,145,486) or Katzakian (U.S. Patent No. 5,863,438). At best, the claims differ from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-

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3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting use of styrene crosslinked with divinylbenzene. Katzakian (U.S. Patent No. 5,863,438) (column 6, line 66-column 7, line 14) discloses styrene-divinylbenzene chlormethylates treated with primary or secondary amines are improved weakly basic anion exchange resins. Haag (U.S. Patent No. 4,145,486) (column 5, lines 32-43) discloses styrene-divinylbenzene is a desired resin with which to make a weak base anion exchange resin. It would have been obvious to use styrene-divinylbenzene chlormethylates treated with primary or secondary amines in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) either because Katzakian (U.S. Patent No. 5,863,438) (column 6, line 66-column 7, line 14) discloses styrene-divinylbenzene chlormethylates treated with primary or secondary amines are improved weakly basic anion exchange resins or because Haag (U.S. Patent No. 4,145,486) (column 5, lines 32-43) discloses styrene-divinylbenzene is a desired resin with which to make a weak base anion exchange resin.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant



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specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 5-13, 15,18, 20-22, 24-29, 33, and 36-41 above, and further in view of Pannekeet (U.S. Patent No. 4,051,221). At best, the claim differs from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting use of isoprene. Pannekeet (U.S. Patent No. 4,051,221) (column 2, lines 3-39) discloses that isoprene is a known monomer for crosslinking weakly basic anion exchangers. It would have been obvious to use isoprene in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Pannekeet (U.S. Patent No. 4,051,221) (column 2, lines 3-39) discloses that isoprene is a known monomer for crosslinking weakly basic anion exchangers.

Claims 15 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 5-13, 15,18, 20-22, 24-29, 33, and 36-41 above, and further in view of Schoenrock (U.S.

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Patent No. 3,982,956). At best, the claims differ from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting use of a pH of 3-5. Schoenrock (U.S. Patent No. 3,982,956) (Abstract) discloses a pH of 2 to 6.5 is a suitable pH for treating sugar solutions with a weakly basic anion exchanger. It would have been obvious to use a pH of 3-5 in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Schoenrock (U.S. Patent No. 3,982,956) (Abstract) discloses a pH of 2 to 6.5 is a suitable pH for treating sugar solutions with a weakly basic anion exchanger.

Claims 20-22, 25, and 37-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 5-13, 15, 18, 20-22, 24-29, 33, and 36-41 above, and further in view of Heikkila (U.S. Patent No. 5,637,225). At best, the claims differ from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn

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(U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting separating arabinose, pentose, hexose, xylitol, and rhamnose. Heikkila (U.S. Patent No. 5,637,225) (column 2, lines 1-16 and Table 1) discloses arabinose, pentose, hexose, xylitol, and rhamnose are desirable products to recover. It would have been obvious to recover pentose, hexose, xylitol, and rhamnose in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Heikkila (U.S. Patent No. 5,637,225) (column 2, lines 1-16 and Table 1) discloses arabinose, pentose, hexose, xylitol, and rhamnose are desirable products to recover.

Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 5-13, 15, 18, 20-22, 24-29, 33, and 36-41 above, and further in view of Heikkila (U.S. Patent No. 5,730,877). At best, the claims differ from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting separating maltose, inositol, and glycerol. Heikkila

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(U.S. Patent No. 5,730,877) (column 4, lines 37-49 and column 12, line 66-column 13, line 3) discloses that maltose, inositol, and glycerol are desirable products to recover. It would have been obvious to recover maltose, inositol, and glycerol in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Heikkila (U.S. Patent No. 5,730,877) (column 4, lines 37-49 and column 12, line 66-column 13, line 3) discloses that maltose, inositol, and glycerol are desirable products to recover.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 5-13, 15, 18, 20-22, 24-29, 33, and 36-41 above, and further in view of Hyoky (U.S. Patent No. 5,795,398). At best, the claim differs from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S.

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Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting separating inositol. Hyoky (U.S. Patent No. 5,795,398) (column 1, lines 5-20) discloses that inositol is a desirable product to recover. It would have been obvious to recover inositol because Hyoky (U.S. Patent No. 5,795,398) (column 1, lines 5-20) discloses that inositol is a desirable product to recover.

Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 5-13, 15, 18, 20-22, 24-29, 33, and 36-41 above, and further in view of Heikkila (U.S. Patent No. 5,730,877). At best, the claims differ from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting the use of simulated moving beds. Heikkila (U.S. Patent No. 5,730,877) (column 2, lines 19-25) discloses use of a continuous or a sequential simulated moving bed enables performance several times higher than a batch process. It would have been obvious to use either a continuous or a sequential simulated moving bed in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification because Heikkila (U.S. Patent No. 5,730,877)

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(column 2, lines 19-25) discloses use of a continuous or sequential simulated moving bed enables performance several times higher than a batch process.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 5-13, 15, 18, 20-22, 24-29, 33, and 36-41 above, and further in view of Kulprathipanja (U.S. Patent No. 5,068,419). At best, the claim differs from either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting a sulfate form. Kulprathipanja (U.S. Patent No. 5,068,419) (Abstract, column 11, lines 36-43 and column 16, lines 23-34) discloses that the sulfate form of weakly basic anion exchange resins is suitable for separation of organic mixtures that includes carbohydrates. It would have been obvious to use a sulfate form in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification in view of Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Kulprathipanja (U.S. Patent No. 5,068,419) (Abstract, column 11, lines 36-43 and

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column 16, lines 23-34) discloses that the sulfate form of weakly basic anion exchange resins is suitable for separation of organic mixtures that includes carbohydrates.

Claims 1, 3-13, 15, 18, 20-22, 24-33, and 36-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856). PTO Translation 06-3081 of Japan Patent No. 4-158260 will serve as a translation of Japan Patent No. 4-158260. At best, the claims differ from over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in reciting use of a weakly basic anion exchange resin, use of water as an eluent, and a particle size range of 100 to 2000 microns. PTO Translation 06-3081 of Japan Patent No. 4-158260 and that which is conceded to be old on pages 1-3 of the instant specification each discloses that weakly basic anion exchange resins chromatographically separate monosaccharides and oligosaccharides. Quinn (U.S. Patent No. 5,772,874) (Abstract, lines 1-16, column 8, lines 3-10, and column 9, lines 20-24) discloses a particle diameter of several hundred microns and a reduced velocity of about 5000 yields improved analytical speeds and quantities. Heikkila (U.S. Patent No. 5,084,104) (column 3, lines 23-39) discloses that pure water is the most preferred eluent for separating a saccharide with an ion exchange resin. Heikkila (U.S. Patent No. 6,146,856) (column 7, line 58-column 8, line 12) discloses the combination of ion exchange particles of several hundred microns and water as an eluent for saccharides

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is well known. It would have been obvious to use a weakly basic anion exchange resin in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) because PTO Translation 06-3081 of Japan Patent No. 4-158260 and that which is conceded to be old on pages 1-3 of the instant specification each discloses that weakly basic anion exchange resins chromatographically separate monosaccharides and oligosaccharides. It would have been obvious to use water as an eluent and a particle size range of 100 to 2000 microns in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) because Quinn (U.S. Patent No. 5,772,874) (Abstract, lines 1-16, column 8, lines 3-10, and column 9, lines 20-24) discloses a particle diameter of several hundred microns and a reduced velocity of about 5000 yields improved analytical speeds and quantities; Heikkila (U.S. Patent No. 5,084,104) (column 3, lines 23-39) discloses that pure water is the most preferred eluent for separating a saccharide with an ion exchange resin; and Heikkila (U.S. Patent No. 6,146,856) (column 7, line 58-column 8, line 12) discloses the combination of ion exchange particles of several hundred microns and water as an eluent for saccharides is well known.

Claims 3, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260); PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 3-13, 15, 18, 20-22, 24-33, and 36-41 above, and further in view of either Schoenrock (U.S. Patent No. 3,982,956) or



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Tanikawa (U.S. Patent No. 6,224,683). At best, the claims differ from either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting use of a weakly acid cation exchange resin. Schoenrock (U.S. Patent No. 3,982,956) (column 1, lines 47-56 and column 2, line 65-column 3, line 20) discloses that use of a weak acid cation exchange resin prior to a weak base anion exchange resin removes undesirable cations. Tanikawa (U.S. Patent No. 6,224,683) (column 1, lines 46-51) discloses a weak acid cation exchange resin aids in softening and demineralization. It would have been obvious to use a weak acid cation exchange resin in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) either because Schoenrock (U.S. Patent No. 3,982,956) (column 1, lines 47-56 and column 2, line 65-column 3, line 20) discloses that use of a weak acid cation exchange resin prior to a weak base anion exchange resin removes undesirable cations or because Tanikawa (U.S. Patent No. 6,224,683) (column 1, lines 46-51) discloses a weak acid cation exchange resin aids in softening and demineralization.

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Claims 3, 4, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 3-13, 15,18, 20-22, 24-33, and 36-41 above, and further in view of Heikkila (U.S. Patent No. 6,146,856). At best, the claims differ from either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting use of a cation exchange resin. Saska (U.S. Patent No. 5,482,631) (column 1, lines 44-49) itself discloses that cation exchange resins separate sugar solutions. Heikkila (U.S. Patent No. 6,146,856) (column 2, lines 4-8) discloses that cation exchange resins chromatographically separate sugar solutions. It would have been obvious to use cation exchange resins in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Saska (U.S. Patent No. 5,482,631) (column 1, lines 44-49) itself discloses that cation exchange resins separate

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sugar solutions and because Heikkila (U.S. Patent No. 6,146,856) (column 2, lines 4-8) discloses that cation exchange resins chromatographically separate sugar solutions.

Claims 5 and 37 rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 3-13, 15,18, 20-22, 24-33, and 36-41 above, and further in view of Fries (U.S. Patent No. 4,718,946). At best, the claims differ from either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting the weakly basic anion exchange resin is an acrylic-based resin. Fries (U.S. Patent No. 4,718,946) (column 1, line 67-column 2, line 12) discloses that use of acrylic in a weakly basic anion exchange resin reduces haze in treating sugar solutions. It would have been obvious to use acrylic in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Fries (U.S. Patent No. 4,718,946) (column 1, line 67-column 2, line 12) discloses that

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use of acrylic in a weakly basic anion exchange resin reduces haze in treating sugar solutions.

Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 3-13, 15, 18, 20-22, 24-33, and 36-41 above, and further in view of either Haag (U.S. Patent No. 4,145,486) or Katzakian (U.S. Patent No. 5,863,438). At best, the claims differ either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting use of styrene crosslinked with divinylbenzene. Katzakian (U.S. Patent No. 5,863,438) (column 6, line 66-column 7, line 14) discloses styrene-divinylbenzene chlormethylates treated with primary or secondary amines are improved weakly basic anion exchange resins. Haag (U.S. Patent No. 4,145,486) (column 5, lines 32-43) discloses styrene-divinylbenzene is a desired resin with which to make a weak base anion exchange resin. It would have been obvious to use styrene-divinylbenzene chlormethylates treated with primary or secondary amines in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan

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Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) either because Katzakian (U.S. Patent No. 5,863,438) (column 6, line 66-column 7, line 14) discloses styrene-divinylbenzene chlormethylates treated with primary or secondary amines are improved weakly basic anion exchange resins or because Haag (U.S. Patent No. 4,145,486) (column 5, lines 32-43) discloses styrene-divinylbenzene is a desired resin with which to make a weak base anion exchange resin.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 3-13, 15,18, 20-22, 24-33, and 36-41 above, and further in view of Pannekeet (U.S. Patent No. 4,051,221). At best, the claim differs from either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting use of isoprene. Pannekeet (U.S. Patent No. 4,051,221) (column 2, lines 3-39) discloses that isoprene is a known monomer for crosslinking weakly basic anion exchangers. It would have been obvious to use isoprene in either

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Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Pannekeet (U.S. Patent No. 4,051,221) (column 2, lines 3-39) discloses that isoprene is a known monomer for crosslinking weakly basic anion exchangers.

Claims 15 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 3-13, 15, 18, 20-22, 24-33, and 36-41 above, and further in view of Schoenrock (U.S. Patent No. 3,982,956). At best, the claims differ from either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting use of a pH of 3-5. Schoenrock (U.S. Patent No. 3,982,956) (Abstract) discloses a pH of 2 to 6.5 is a suitable pH for treating sugar solutions with a weakly basic anion exchanger. It would have been obvious to use a pH of 3-5 in either Saska (U.S. Patent No. 5,482,631) or Saska (WO

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00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Schoenrock (U.S. Patent No. 3,982,956) (Abstract) discloses a pH of 2 to 6.5 is a suitable pH for treating sugar solutions with a weakly basic anion exchanger.

Claims 20-22, 25, and 37-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 3-13, 15,18, 20-22, 24-33, and 36-41 above, and further in view of Heikkila (U.S. Patent No. 5,637,225). At best, the claims differ from either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting separating arabinose, pentose, hexose, xylitol, and rhamnose. Heikkila (U.S. Patent No. 5,637,225) (column 2, lines 1-16 and Table 1) discloses arabinose, pentose, hexose, xylitol, and rhamnose are desirable products to recover. It would have been obvious to recover arabinose, pentose, hexose, xylitol, and rhamnose in either Saska (U.S. Patent No. 5,482,631) or

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Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Heikkila (U.S. Patent No. 5,637,225) (column 2, lines 1-16 and Table 1) discloses arabinose, pentose, hexose, xylitol, and rhamnose are desirable products to recover.

Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 3-13, 15,18, 20-22, 24-33, and 36-41 above, and further in view of Heikkila (U.S. Patent No. 5,730,877). At best, the claims differ from either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting separating maltose, inositol, and glycerol. Heikkila (U.S. Patent No. 5,730,877) (column 4, lines 37-49 and column 12, line 66-column 13, line 3) discloses that maltose, inositol, and glycerol are desirable products to recover. It would have been obvious to recover maltose, inositol, and glycerol in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-



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158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Heikkila (U.S. Patent No. 5,730,877) (column 4, lines 37-49 and column 12, line 66-column 13, line 3) discloses that maltose, inositol, and glycerol are desirable products to recover.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 3-13, 15,18, 20-22, 24-33, and 36-41 above, and further in view of Hyoky (U.S. Patent No. 5,795,398). At best, the claim differs from either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting separating inositol. Hyoky (U.S. Patent No. 5,795,398) (column 1, lines 5-20) discloses that inositol is a desirable product to recover. It would have been obvious to recover inositol because Hyoky (U.S. Patent No. 5,795,398) (column 1, lines 5-20) discloses that inositol is a desirable product to recover.

Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 3-13, 15,18, 20-22, 24-33, and 36-41 above, and further in view of Heikkila (U.S. Patent No. 5,730,877). At best, the claims differ from either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting the use of simulated moving beds. Heikkila (U.S. Patent No. 5,730,877) (column 2, lines 19-25) discloses use of a continuous or a sequential simulated moving bed enables performance several times higher than a batch process. It would have been obvious to use either a continuous or a sequential simulated moving bed in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Heikkila (U.S. Patent No. 5,730,877) (column 2, lines 19-25) discloses use of a continuous or sequential simulated moving bed enables performance several times higher than a batch process.

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Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) as applied to claims 1, 3-13, 15,18, 20-22, 24-33, and 36-41 above, and further in view of Kulprathipanja (U.S. Patent No. 5,068,419). At best, the claim differs from either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) in reciting a sulfate form. Kulprathipanja (U.S. Patent No. 5,068,419) (Abstract, column 11, lines 36-43 and column 16, lines 23-34) discloses that the sulfate form of weakly basic anion exchange resins is suitable for separation of organic mixtures that includes carbohydrates. It would have been obvious to use a sulfate form in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) in view of Hirata (Japan Patent No. 4-158260), PTO Translation 06-3081 of Japan Patent No. 4-158260, that which is conceded to be old on pages 1-3 of the instant specification, Quinn (U.S. Patent No. 5,772,874), Heikkila (U.S. Patent No. 5,084,104), and Heikkila (U.S. Patent No. 6,146,856) because Kulprathipanja (U.S. Patent No. 5,068,419) (Abstract, column 11, lines 36-43 and column 16, lines 23-34) discloses that

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the sulfate form of weakly basic anion exchange resins is suitable for separation of organic mixtures that includes carbohydrates.

The remarks that water and particle size are not disclosed either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification. However, the open format claims are considered to read on PTO Translation 06-3081 of Japan Patent No. 4-158260 page 9, line 3's 50-90 acetonitrile aqueous solution and page 13, the fifth line from the bottom's 75% acetonitrile water. In any event, Quinn (U.S. Patent No. 5,772,874) (Abstract, lines 1-16, column 8, lines 3-10, and column 9, lines 20-24) discloses a particle diameter of several hundred microns and a reduced velocity of about 5000 yields improved analytical speeds and quantities. Heikkila (U.S. Patent No. 5,084,104) (column 3, lines 23-39) discloses that pure water is the most preferred eluent for separating a saccharide with an ion exchange resin. Heikkila (U.S. Patent No. 5,084,104) (column 7, line 58-column 8, line 12) discloses the combination of ion exchange particles of several hundred microns and water as an eluent for saccharides is well known. As such, it would have been obvious to use water as an eluent and a particle size range of 100 to 2000 microns in either Hirata (Japan Patent No. 4-158260) in view of PTO Translation 06-3081 of Japan Patent No. 4-158260 or that which is conceded to be old on pages 1-3 of the instant specification because Quinn (U.S. Patent No. 5,772,874) (Abstract, lines 1-16, column 8, lines 3-10, and column 9, lines 20-24) discloses a particle diameter of several hundred microns and a reduced velocity of about 5000 yields improved analytical speeds and quantities;

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Heikkila (U.S. Patent No. 5,084,104) (column 3, lines 23-39) discloses that pure water is the most preferred eluent for separating a saccharide with an ion exchange resin; and Heikkila (U.S. Patent No. 5,084,104) (column 7, line 58-column 8, line 12) discloses the combination of ion exchange particles of several hundred microns and water as an eluent for saccharides is well known.

The remarks urge that which is conceded to be old on pages 1-3 of the instant specification does not disclose use of a weakly basic anion exchange resin. However, that which is conceded to be old on pages 1-3 of the instant specification discloses use of a weakly basic anion exchange resin on page 2, lines 9-14 and 26-31 and page 3, lines 3-13 of the instant specification.

The remarks urge that use of a weakly basic anion exchange resin is not disclosed in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225). However, PTO Translation 06-3081 of Japan Patent No. 4-158260 and that which is conceded to be old on pages 1-3 of the instant specification each discloses that weakly basic anion exchange resins chromatographically separate monosaccharides and oligosaccharides. As such, it would have been obvious to use a weakly basic anion exchange resin in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) because PTO Translation 06-3081 of Japan Patent No. 4-158260 and that which is conceded to be old on pages 1-3 of the instant specification each discloses that weakly basic anion exchange resins chromatographically separate monosaccharides and oligosaccharides.

The remarks that water and particle size are not disclosed in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225). However, Quinn (U.S. Patent No. 5,772,874) (Abstract, lines 1-16, column 8, lines 3-10, and column 9, lines 20-24) discloses a particle diameter of several hundred microns and a reduced velocity of about 5000 yields improved analytical speeds and quantities. Heikkila (U.S. Patent No. 5,084,104) (column 3, lines 23-39) discloses that pure water is the most preferred eluent for separating a saccharide with an ion exchange resin. Heikkila (U.S. Patent No. 6,146,856) (column 7, line 58-column 8, line 12) discloses the combination of ion exchange particles of several hundred microns and water as an eluent for saccharides is well known. As such, it would have been obvious to use water as an eluent and a particle size range of 100 to 2000 microns in either Saska (U.S. Patent No. 5,482,631) or Saska (WO 00/42225) because Quinn (U.S. Patent No. 5,772,874) (Abstract, lines 1-16, column 8, lines 3-10, and column 9, lines 20-24) discloses a particle diameter of several hundred microns and a reduced velocity of about 5000 yields improved analytical speeds and quantities; Heikkila (U.S. Patent No. 5,084,104) (column 3, lines 23-39) discloses that pure water is the most preferred eluent for separating a saccharide with an ion exchange resin; and Heikkila (U.S. Patent No. 6,146,856) (column 7, line 58-column 8, line 12) discloses the combination of ion exchange particles of several hundred microns and water as an eluent for saccharides is well known.

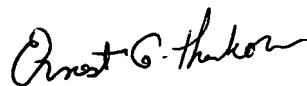
**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication should be directed to E. Therkorn at telephone number (571) 272-1149. The official fax number is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**Ernest G. Therkorn**  
**Primary Examiner**  
**Art Unit 1723**

EGT  
July 5, 2007